

A taxonomic study on the genus *Cheiopachus* Westwood from China, with descriptions of two new species (Hymenoptera: Pteromalidae)

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Abstract: The Chinese species of the pteromalid genus *Cheiopachus* are treated. Two new species, *C. mai* sp. nov. and *C. vimineus* sp. nov., are described and illustrated. The type specimens are deposited in the Zoological Museum, Institute of Zoology, the Chinese Academy of Sciences.

Key words: *Cheiopachus*; Pteromalidae; new species; China

The genus *Cheiopachus* Westwood^[1] belongs to the subfamily Pteromalinae of Pteromalidae. *Cheiopachus* can be recognized easily by the following characteristics: forewing with 2 transverse maculae (Figs: 4, 7); stigmal knob short; ventral edge of the fore femur with a broad tooth; hind femur enlarged, stouter than mid femur.

Nine species of *Cheiopachus* were recorded from the world, distributed mainly in Palearctic, Nearctic and Afrotropical regions, except one was recorded from Oriental region. This paper describes two new species from Palearctic region in China.

Cheiopachus Westwood, 1828

Cheiopachus Westwood, 1828: 23. Type-species: *Diplolepis quadrum* Fabricius, by original designation.

Tropidogastra Ashmead^[2], 1904: 323. Type-species: *T. arizonensis* Ashmead, by monotypy.

Cheiopachus Westwood; Gahan^[3], 1938: 219~222. Key to the North American species. Ferrière^[4], 1948: 522~523. Hedqvist^[5], 1963: 102~110. Graham, 1969: 416~418. Yang, 1996: 164~171.

Generic diagnosis: Head near circle; clypeus shallowly emarginate; scrobe distinct and with carina between two scrobes; antennal insertion lower the lower ocular line; antennal formula 11263; scape widen basally; pronotal collar short; thorax convex; propodeum with complete media carina, plica indistinct; forewing usually with 2 transverse maculae; fore femur with a broad tooth on ventral edge; hind femur enlarged; hind tibia with 2 spur.

The genus is close to *Acrocormus*, but *Acrocormus* is different from *Cheiopachus* in the following characters: fore femur without tooth; forewing with the stigmal spot developed; stigmal knob much longer than narrow part stigmal vein.

Biology: The species of the genus are parasites on larvae and pupae of many species of Curculionidae and Scolytidae (Coleoptera).

Distribution: Mainly in Palearctic, Nearctic, Afrotropical and Oriental region. In China, it is recorded from the following provinces: Heilongjiang, Nei Mongol Autonomous Region, Xinjiang Uygur Autonomous Region, Shaanxi, Gansu, Ningxia, Shandong.

Key to Chinese species of *Cheiopachus*, female

1. Gaster at most as long as head and thorax combined 2
 Gaster distinctly longer than head and thorax combined; longer than thorax and head together; basal vein of forewing with hairs 3
2. Marginal vein about 1.1~1.3 times as long as stigmal vein; basal vein bare, basal cell without hair *C. quadrum*
 Marginal vein about 1.6 times as long as stigmal vein; basal vein with 1~7 hairs; notauli almost reaching the posterior margin of mesoscutum *C. juglandis*
3. Gaster at most as wide as thorax width; gaster 2.69 times as long as broad *C. cavicapitis*
 Gaster narrower than thorax width; gaster at least 3 times 4
4. Basal vein incomplete, basal cell only one hair (Fig. 4); gaster 3.5 times as long as broad; marginal vein 1.1~1.2 times as long as stigmal vein *C. mai* sp. nov.
 Basal vein complete; basal cell bare (Fig. 7); gaster 4 times as long as broad; marginal vein 1.4 times as long as stigmal vein *C. vimineus* sp. nov.

Cheiopachus quadrum (Fabricius)

Ichneumon quadrum Fabricius^[6], 1787: 270.

Cheiopachus quadrum (Fabricius) Westwood, 1828: 25.

Cheiopachus quadrum (Fabricius) Graham, 1969: 416~418. Yang, 1996: 170~172.

Other synonyms of the species, based on Graham^[7], Bouček^[8] and Noyes^[9], are: *Cleonymus maculipennis* Curtis, *Cynips tripunctatus* Fourcroy, *Pachychirus intermedia* Förster, *Pteromalus bicaliginosus* Ratzeburg, *Pteromalus bimaculatus* Swederus, *Pteromalus binaevius* Ratzeburg, *Pteromalus binimbatus* Ratzeburg, *Pteromalus binubeculatus* Ratzeburg, *Pteromalus fraxini* Ratzeburg.

Specimens examined: England: North-east, New castle, 1 ♀ 1 ♂, 1987, ex. *Scolytus laevis*, no. CIE A18607, Det. Bouček, 1987; Upl. Vallentuna: 1 ♀, 25-VI-1959, Coll. K. J. Hedqvist, Det. Hedqvist, 1976; Sdm. Huddinge: 1 ♀, X-1959, Coll. T-E. Leiler, Det. Hedqvist, 1976. (from NHM). China: Xinjiang Uygur Autonomous Region, Kargilik, 1 400 m, 1 ♀, VII-1986; Beijing, 1 ♀, 5-X-1972, ex. scolytid, Coll. Yang Ji-kun; Fujian, Changting, 3 ♂ ♂, 16-VI-1975, Coll. Liao Ding-xi; Xinjiang Uygur Autonomous Region, Tarim, 2 ♀ ♀ 2 ♂ ♂, 15-V-1979, ex. *Scolytus rugulosus* (Ratzeburg), Coll. Wang Ke-xiang.

Host: Parasites of species of Curculionidae and Scolytidae, including the following genera: *Blastophagus*, *Chaetoptelius*, *Dryocoetes*, *Hylesinus*, *Leperisinus*, *Magdalis*, *Phloeotribus*

Pityogenes (Curculionidae); *Scolytus* (Scolytidae); *Tetrops* (Cerambycidae) (Noyes^[8], 1998).

Distribution: China (Heilongjiang, Nei Mongol Autonomous Region, Xinjiang Uygur Autonomous Region, Gansu, Shaanxi, Beijing, Fujian); Worldwide.

***Cheiopachus cavicapitis* Yang**

Cheiopachus cavicapitis Yang, 1996: 166~168.

Biology: Parasites of the larvae and pupae of bark beetles, such as *Hylurgops*, *Phloeosinus*, *Tomicus*, *Pityogenes*, *Orthogomicus*^[10].

Distribution: China (Heilongjiang, Beijing, Shaanxi, Ningxia, Gansu, Xinjiang Uygur Autonomous Region, Shandong, Nei Mongol Autonomous Region)^[10].

***Cheiopachus juglandis* Yang**

Cheiopachus juglandis Yang, 1996: 168~170.

Biology: Parasites of the larvae and pupae of *Sphaerotrypes coimbatorensis* (Stebbing).

Distribution: China (Shaanxi)^[10].

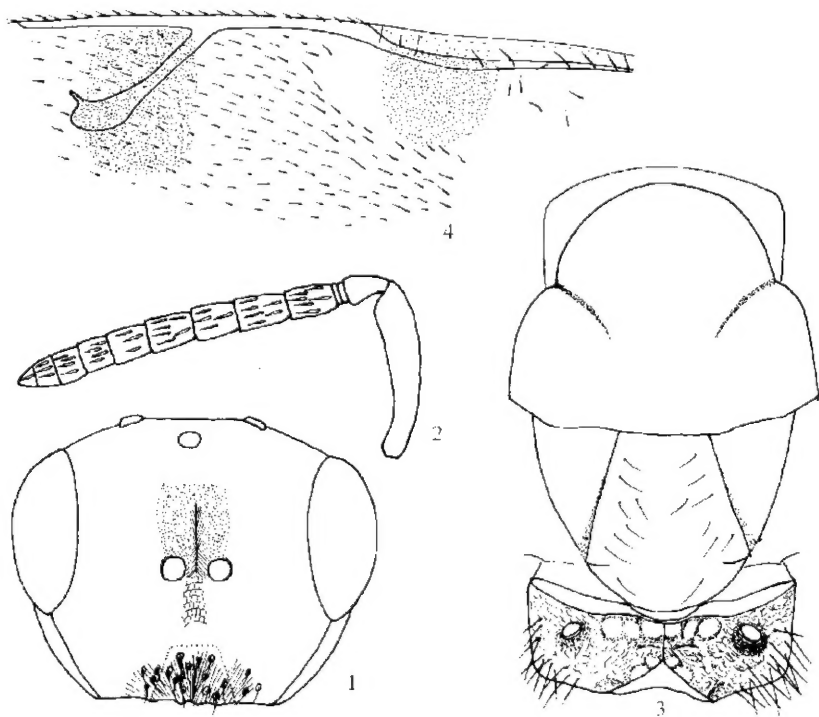
***Cheiopachus mai* sp. nov. (Figs. 1~4)**

Diagnosis: Female: 4 mm. Head and thorax dark green, gaster brown; antenna brown except scape yellowish brown; coxa concolorous with thorax, femur brown, others yellowish brown.

Face reticulate, lower face pilose and scattering piliferous punctures; clypeus with distinct striation and scattering piliferous punctures; clypeal margin slightly emarginate; scrobe distinct, and with carina between both scrobes. Antennal insertion at center of face; scape beyond vertex; pedicel longer than its broad; two anelli transverse; each funicular segment longer than its broad and with sensilla; clava at most as long as the two preceding segments combined; pedicel and flagellum together wider than head width. Relative measurements: head width 64, height 55, eyes space 41, eyes height 33, malar space 18, antennal toruli to clypeal margin 26, antennal toruli to median ocelli 23, flagellum plus pedicel 75.

Thorax reticulated. Pronotum not margined, almost right angled with mesoscutum; lateral panel of pronotum large. The anterior part of mesoscutum distinct convex; notauli incomplete, at most reaching 1/2 length of mesoscutum; scutellum without frenal line. Propodeum short; median carina complete, plica absent. Forewing densely hairy outside speculum, upper surface of costal cell bare; basal vein with several hairs; basal cell with single hair and open posteriorly. Fore femur large and one-toothed ventrally. Petiole longer than its broad, with single hair on each side. Gaster about 3.5 times as long as broad; hind margin of first tergite emarginated; each tergite dorsum reticulated and pilose. Relative measurements: pronotum length 2, width 50, mesoscutum 50:60, scutellum 35:32, marginal vein 35, postmarginal vein 35, stigmal vein 30, gaster length 155, width 44.

Male: Unknown.



Figs. 1~4 *Cheiropachus mai* sp. nov. ♀ 马氏四斑金小蜂, 新种♀

1. head in front view 头前面观; 2. antenna 触角; 3. thorax in dorsal view 胸部背面观; 4. forewing 前翅

Remarks: This new species can be separated from *C. juglandis* Yang and *C. cavicapitis* Yang with the gaster 3 times as broad as long. This species closely resembles with *C. vimineus* sp. nov., but it differs as follows: basal vein incomplete, basal cell only one hair; gaster 3.5 times as long as broad; marginal vein 1.1~1.2 times as long as stigmal vein.

Etymology: This species is named in honour of the academician MA Shi-jun.

Holotype: ♀, China: Gansu, Lanzhou, 27-IV-1955, Coll. MA Shi-jun, XIA Kai-ling, CHEN Yong-lin.

Biology: Unknown.

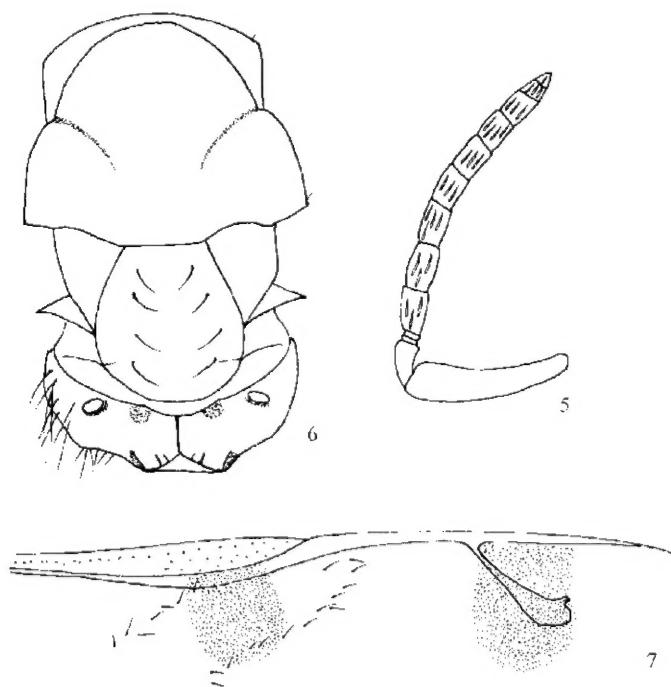
Distribution: China (Gansu).

***Cheiropachus vimineus* sp. nov. (Figs. 5~7)**

Diagnosis: Female: 4 mm. Head and thorax black, gaster brown; antenna brown except scape yellow; coxa concolorous with thorax; fore and mid femur yellowish brown, others yellow or palely brown.

Face reticulate, lower face pilose and scattering piliferous punctures; clypeus with distinct striation; clypeal margin slightly emarginate; scrobe reaching the median ocellus, and with carina between both scrobes. Antennal insertion at center of face; scape reaching vertex; pedicel longer

than its broad; two anelli transverse; each funicular segment longer than its broad and with sensilla; clava at most as long as the two preceding segments combined; pedicel and flagellum together wider than head width. Relative measurements; head width 61, height 53, length 30, POL: OOL as 16:7.5, eyes space 36, eyes height 32, eye length 22, temple 7, malar space 15, antennal toruli to clypeal margin 21, antennal toruli to median ocelli 21, flagellum plus pedicel 70.



Figs. 5-7 *Cheiropachus vimineus* sp. nov. ♀ 细体四斑金小蜂, 新种♀

5. antenna 触角; 6. thorax in dorsal view 胸部背面观; 7. forewing 前翅

Thorax convex and reticulated. Pronotum not margined. The anterior part of mesoscutum distinct protrudent; notauli incomplete; scutellum without frenal line. Propodeum short and with 5 pairs of hairs; median carina complete, plica absent. Forewing with two maculae; upper surface of costal cell bare; basal vein with several hairs; basal cell without hair and open posteriorly; basal vein complete. Petiole longer than its broad, with single hair on each side. Fore femur large and one-toothed ventrally. Gaster about 4.8 times as long as broad; hind margin of first tergite e-margined; each tergite dorsum with reticulation and hairs. Relative measurements; pronotum length 3, width 45, mesoscutum 44:56, scutellum 31:28, marginal vein 34, postmarginal vein 30, stigmal vein 24, stigma length 10, height 5.5, gaster length 175, width 35.

Male: Same as female. Forewing with two maculae and larger than those of female; gaster yellow anteriorly.

Remarks: This new species can be separated from *C. juglandis* Yang and *C. cavicapitis* Yang with the gaster 3 times as broad as long. This species closely resembles with *C. mai* sp.

nov., but it differs as follows: basal vein complete, basal cell bare; gaster 4 times as long as broad; marginal vein 1.4 times as long as stigmal vein.

Etymology: The specific name is from the Latin word *vimineus* (= vimineous).

Holotype: ♀, China: Beijing, 5-X-1972, ex. scolytid, Coll. YANG Ji-kun. Paratype: 2♀ 6♂♂, same as holotype.

Biology: Parasites of scolytid.

Distribution: China (Beijing).

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中国四斑金小蜂属分类研究及二新种记述

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摘要: 记述了中国金小蜂科金小蜂亚科的四斑金小蜂属 (*Cheiropachus* Westwood, 1828) 5 个种, 包括 2 新种: 马氏四斑金小蜂 *C. mai* 新种分布于甘肃 (兰州); 细体四斑金小蜂 *C. vimineus* 新种分布于北京。文中提供了分种检索表、新种形态描述和特征图。模式标本保存于中国科学院动物研究所动物标本馆。

关键词: 金小蜂科; 四斑金小蜂属; 新种; 中国

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